Response Summary and Evaluation
Warehouse Services, Inc., Mount Vernon, Indiana
December 17, 1998 Fire

RESPONSE SUMMARY

Background

On December 17, 1998 the Indiana Department of Environmental Management (IDEM) Emergency Response Section was notified of a large warehouse fire which contained an estimated twenty-eight thousand (28,000) tons of plastic. The fire was extinguished on December 20, 1998. The owner of the warehouse was Warehouse Services, Inc. (WSI), located in Mount Vernon, Indiana, Posey County. Approximately forty (40) fire departments from Indiana, Kentucky, and Illinois responded. Both Emergency Response and the U.S. Environmental Protection Agency (EPA) responded. The Mount Vernon Fire and Rescue Chief served as Incident Commander. Emergency Response and EPA assisted by coordinating the following response activities:

- insure fire was extinguished properly
- contain suppression water run-off*
- contain molten plastic run-off*
- dike, monitor, and sample McFadden Creek which was impacted by the run-off*
- conduct air monitoring* (Emergency Response did some initial air monitoring, but our instruments are limited)
- work with the Mt. Vernon public water intake, which was shut down due to the impact to McFadden Creek which is a tributary to the Ohio River, just upstream of the Mt. Vernon public water intake
- investigate extent of suppression water run-off (i.e., continuous monitoring of ditches, stormwater sewer system, and the Ohio River)
- provide technical assistance and advice on soil, water, and air sampling parameters
- insure the resulting debris was disposed properly

*These tasks were conducted by contractors hired by the responsible parties and/or EPA contractors. Emergency Response and EPA provided oversight and technical input on how best to manage the tasks.

Issues of Concern During the Fire

Outlined below is a summary of the major issues of concern and associated sampling and analyses. The information is not intended to be a complete overview of all of the sampling and related analysis which occurred. The public files at the IDEM Indianapolis and Southwest Regional offices contain the complete sampling and analysis reports which were submitted to the Agency. These files should be consulted for more in depth information.

Materials Burned

The warehouse stored raw materials and plastics from the following companies: GE Plastics, LinPac, and B&M Plastics. Primary materials which burned included: polystyrene, styrofoam, residential insulation, flame retardants, color additives, resins, acrylics, polycarbonate plastics, the warehouse structure, and associated equipment. The burning material caused a concern from an air emission standpoint (both for the general public and the responders) and also in terms of the resulting molten plastic run-off which needed to be contained and managed.

Air Emissions

Just after midnight on December 18, 1998, an EPA contractor began air monitoring downwind of the fire. Initial air monitoring results indicated that other than particulate matter, no contaminants were present in the breathing zone. Throughout December 18, 1998, IDEM received odor complaints from as many as 25 Indiana counties. Summarized below is a synopsis of the air monitoring which was conducted throughout the response:

- An EPA team conducted air monitoring from Hammond, Indiana to the northern Montgomery County line. No levels of chlorine, organic vapors, or air particulate were detected above background.
- EPA contractors (Superfund Technical Assessment and Response Team) conducted air monitoring within the plume at several locations, including locations along Bypass 69, Nation Road, Farmersville Elementary School, Old Highway 62, New Highway 62, and the Response Command Post. The highest concentration of particulate matter detected by this team was on Bypass 69 at 3.80 micrograms per cubic meter (mg/m^3).
- EPA contractors (Response Engineering and Analytical Contract team) conducted air monitoring in various locations, including: residential areas surrounding the site; the town of Mt. Vernon; areas south of the site into Kentucky; New Harmony; and Wadesville. Particulate matter was detected at all locations. The highest concentration of particulate matter was detected at 5.86 mg/m^3, along Highway 62, south of the fire. In addition, EPA contractors collected volatile organic compound samples. One of the samples, which was collected in the plume on Highway 62 south of the fire, detected the following: benzene at 46 parts per billion per volume (ppbv); toluene at 8 ppbv; styrene at 5 ppbv; and methylene chloride at 0.4 ppbv (the methylene chloride detection is an estimated concentration). Responder exposure was the primary concern with the detections of particulate and other constituents along Highway 62 as there were no residences or businesses south of the fire and Highway 62 was closed when the plume shifted in its direction.
- IDEM conducted air monitoring in the northwest region of the state, including areas near Merrilliville, Rensselaer, and Lafayette. No detectable levels of contamination were found.
- State Fire Marshall's Office and Boots and Coots (GE Plastic's contractor) conducted air monitoring in the path of the plume traveling several counties north via helicopter. No levels of contamination were detected above background.
- Boots and Coots and GE Plastics performed air monitoring in the fire and its immediate plume (within the site boundary). Small concentrations of chlorine were detected for brief moments in the immediate plume and benzene was detected in the fire itself.
- Boots and Coots performed air monitoring downwind of the fire in Farmersville, Bufkin, and Solitude. The highest level of particulate matter detected was 2.7 micrograms per cubic meter (ug/m^3). In addition, 0.15 parts per million (ppm) of chlorine was detected in Bufkin.

On December 17, 1998 at approximately 6:00pm, the Mount Vernon Fire and Rescue Chief, as Incident Commander, suggested voluntary evacuation to persons living in the Mount Vernon area, just downwind of the smoke plume. Approximately 150-200 residents evacuated.

Impact to Waters of the State

A temporary containment berm was in place on-site to control contaminated runoff when Emergency Response arrived on scene on December 17, 1998. However, this on-site structure proved to be inadequate due to the volume of water used to initially fight the fire. After midnight on December 18, 1998 McFadden Creek was diked and water samples began to be pulled from the creek and the Ohio River. This sampling occurred throughout the fire as well as after the fire was extinguished. As a precaution, the Mount Vernon Public Water Intake closed their water intake on December 17, 1998. Due to the shutdown of the intake, the Mount Vernon Public Water supply became depleted. Therefore, on December 18, 1998, the Mount Vernon Public Water Intake began trucking in water from Evansville and issued a boil advisory due to the trucking of water. On December 21, 1998 heavy rains compromised the entire containment system and resulted in a controlled release of the McFadden Creek dam. No maximum contaminant levels (MCLs) were exceeded in the Ohio River. The Mount Vernon Public Water Intake conducted continuous water monitoring throughout the incident and analyzed the results prior to resuming utilization of water from their intake.

Contaminated Run-off

After midnight on December 18, 1998 a trench and pit system was constructed to contain the contaminated water run-off and molten plastic. On December 19, 1998 this system was expanded to a closed loop fire suppression system which allowed for the contained water to be pumped back into the firefighting apparatus. Some of the contained water was collected and transported to GE Plastics. This water was treated through GE Plastics' wastewater treatment system and discharged through their National Pollutant Discharge Elimination System (NPDES) permit. The remaining contained water was pumped into tanks, which were brought to the site to provide storage capacity. This water was treated and disposed properly at a facility in Dayton, Ohio.

Dioxin Contamination

On or around December 22, 1998, external persons raised a concern that dioxin was released during the fire. Outlined below is monitoring and sampling results related to dioxin:

- Air monitoring analytical did not indicate any dioxin was released.
- Water sample results did not detect the presence of dioxin.
- Soil samples taken by GE Plastics' contractor, Koester Environmental, did not detect the presence of dioxin.
- Ash and soot sampled in the warehouse indicated no detection of dioxin.
- U. S. EPA took soil samples off-site as far north as I-64. Some trace levels of dioxin were present in one of seven samples, but the detection was not above action levels and was not suspected to be attributable to the fire.

IDEM and U.S. EPA concluded there was not any environmental or health concerns related to dioxin as a result of the fire. The analytical sample data results were available to the public on December 30, 1998.

Debris Removal and Disposal

WSI hired Koester Environmental to perform waste determinations on the resulting debris. They determined all the resultant waste was non-hazardous. The waste was disposed at Laubscher Meadows Landfill in Evansville. Laubscher Meadows is a lined landfill which meets 329 IAC 10 design and operations standards and can accept Category B Special Waste. IDEM solid and special waste inspectors monitored the acceptance and handling of the waste at the landfill.

Public File Information

Both the IDEM public files in Indianapolis and the Southwest Regional Office contain numerous documents related to the WSI fire. Primary documents contained in the public files include:

- IDEM Emergency Response Section Initial Incident Report, Incident Number 9812136
- Letter Report for WSI/GE Plastics Fire - prepared by EPA contractor, Ecology and Environment, Superfund Technical Assessment and Response Team (details air and water sampling results)
- Air Monitoring and Sampling, WSI Warehouse Fire Work Assignment #3-001 - prepared by EPA contractor, Roy F. Weston, Response Engineering and Analytical Contract
- Water Sample Results - sampling performed for the Mount Vernon Public Water Intake and GE Plastics by Koester Environmental; analysis conducted by Central States Analytical
- Air and Water Sampling Results - sampling performed by GE Plastics and/or Boots and Coots; analysis conducted by GE Plastics, Clayton Group Services, Inc., Benchmark Laboratories, and Environmental Consulting
- LinPac's Inventory
- GE Plastics' Inventory
- B&M Plastics' Inventory

RESPONSE EVALUATION

External Evaluation Discussion

On February 11, 1999 a response evaluation meeting was initiated by the Mount Vernon Fire and Rescue Chief (Incident Commander) and included representatives from the following entities: U.S. Coast Guard, U.S. EPA, IDEM Emergency Response, GE Plastics, and the Posey County Emergency Management Agency. The discussion focused on "lessons learned" and what could be improved upon in future responses. Listed below are the issues that were discussed which were pertinent to IDEM and U.S. EPA:

- Incident command structure and facilities needed to be mobilized more quickly. It took approximately two (2) days to fully engage the incident command structure and for the incident command trailer to be set up on site with telephones, a facsimile machine, and other communication capabilities.
- Posey County provided IDEM's 800 general information telephone number to concerned residents, with no prior notice to Emergency Response that this number was being given as the WSI fire public information telephone number.
- Emergency Response and EPA were not consulted regarding evacuation decisions (both when the voluntary evacuation was put in place and when it was rescinded). While evacuation decisions are the responsibility of the Incident Commander, Emergency Response and EPA could have provided input to the decision, most specifically by conducting testing in some of the homes prior to the rescinding of the evacuation.
- Emergency Response and U.S. EPA were not contacted until approximately 6:00pm on December 17, 1998, even though the fire began around 4:00pm. Mount Vernon Fire and Rescue responded initially and then called in the GE Plastics' Fire Department in accordance with a mutual aid agreement. Once both departments were on site they determined it prudent to contact both IDEM and U.S. EPA. Since this incident, Posey County agencies are routinely contacting IDEM in a more expeditious manner.
- IDEM's and U.S. EPA's quick response time were commended.
- Prior to the incident, Emergency Response did not have access to the local radio communication system. On site communication capabilities would have been enhanced if IDEM had access to this radio system during the incident. After the incident, IDEM was provided Posey County and Mount Vernon radio frequency access.
- Site security was a concern and all agreed earlier activation of the National Guard could have benefitted efforts to manage security.

Internal Evaluation

In addition to the formal external evaluation, IDEM evaluated the response internally. Issues discussed included:

- The Southwest Regional Emergency Responder's air monitoring equipment at the time of the fire consisted of a cannonball, which monitors for oxygen, carbon monoxide, lower explosive limits, and hydrogen sulfide. Since the fire, the regional responder has been provided a photo-ionization device (PID) which provides further air monitoring capabilities.
- It would have been beneficial to have a dedicated human health toxicologist to review real time monitoring results and provide advice on potential impacts. The Indiana State Department of Health provided some input via the telephone, but IDEM does not have a dedicated toxicologist available to assist 24 hours a day specifically with environmental human health issues. GE Plastics had an industrial hygienist on site for a portion of the response to assist with analysis of the air samples.
- The State Emergency Management Agency, the State Fire Marshall's Office, the Indiana Department of Natural Resources (IDNR), and IDEM all responded to the fire. The coordination amongst these groups proved effective and beneficial. IDEM and State Fire Marshall's Office consulted one another and coordinated air monitoring in the initial phase of the response. IDEM and IDNR coordinated work along the impacted waterways. The State Emergency Management Agency (SEMA) provided one state voice through their public information officer, which relieved the other agencies of having to fill this need and also helped to ensure effective coordination and communication amongst the responding state agencies. IDEM, IDNR, and SEMA maintained a strong presence throughout the response.
- The WSI fire was the first major response (in terms of impact and number of responding entities) in the area of an IDEM regional office. Emergency Response utilized two field responders, one from the Southwest Regional Office and one from the Indianapolis Office. In addition, numerous staff and managers from both offices were involved with different facets of the response (chemistry, drinking water, etc.). The response highlighted a need for a more coordinated approach to regional responses, both in terms of management oversight, coordination between the Indianapolis Office and the Regional Office, and responding to external inquiries. Based on internal discussions with all of the IDEM Regional Offices and Emergency Response managers, a Regional Emergency Response Coordination Plan was developed and became effective February 26, 1999. The plan outlines reporting structures, communication mechanisms, and emergency response coordination issues. The plan has proven effective in subsequent regional emergency responses.

Internal Evaluation - continued

- The WSI fire highlighted the efficiency and effectiveness of having regionally located emergency responders. IDEM was notified at approximately 6:00pm on December 17, 1998 of the fire and a responder was on-site by 7:30pm. In addition, a U.S. EPA On-Scene Coordinator, who is regionally located in southern Illinois, was able to readily respond by 8:00pm, with equipment and contractors.
- Emergency Response and EPA conducted a well coordinated response, working cooperatively and making joint decisions.
- A second responder from Emergency Response arrived on scene early evening on December 18, 1998. Due to the magnitude of the incident and the impending length of the response, a second responder should have been dispatched earlier, on the morning of December 18, 1998. Having the second responder on site earlier would have allowed for an earlier relief of the first responder, who initially was on site for more than 24 hours. In addition, having a second responder on-site earlier would have assisted with coordination, as the second responder would have been involved with the response more from the onset. In future incidents in which the magnitude and longevity of a response are such that a second responder may be needed, we will proactively dispatch a second or even third responder to ensure additional resources are on scene within the first 12-16 hours.
- This incident confirmed the need for Emergency Response to have access after hours to an IDEM chemist. Emergency Response was able to contact an IDEM chemist at approximately 9:00pm on December 17, 1998 and get him involved from the onset of the incident. To help ensure this occurs as smoothly in the future, the chemistry sections have since formalized a calling roster for after hours Emergency Response assistance.

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